Lesson Title	Cell Microscopy: Exploring biological domains and kingdoms
Length of Lesson	50 min class period
Created By	Kendra Wright
Subject	Science
Grade Level	7th grade
State Standards	7th grade Inquiry: 1c, 1f, 3b
DOK Level	DOK 1, DOK 2
DOK Application	Recall, Skill/Concept
National Standards	5-8th grade: A (Inquiry)
Graduate Research Element	Microscopy is critical to bacterial observation in my research. I used microscopes to observe the behavior of bacteria affected by mercury contamination.

Student Learning Goal

MS 7th grade

1c. Collect and display data using simple tools and resources to compare information (using standard, metric, and non-standard measurement). (DOK 2)
1f. Explain how science and technology are reciprocal. (DOK 1)
3b.Classify the organization and development of living things to include prokaryotic (e.g., bacteria) and eukaryotic organisms (e.g., protozoa, certain fungi, multicellular animals and plants). (DOK 2)

National Science Education Standards 5-8th grade

Content Standard A: Abilities necessary to do scientific inquiry.
Content Standard C: Structure and function of living things.

Materials Needed (supplies, hand-outs, resources):

Light Microscopes, onions, pond water, tooth picks, cheek cells, iodine stain for cheek cells and onion cells, Cells.pptx, and Cell lab.docx

Lesson Performance Task/Assessment:

The purpose of this lesson is to observe different types of cells under light microscopes. The goal of the cell microscopy is to help students understand the differences between the two domains (Eukarya and Prokaraya) and start identifying kingdom characteristics. Students will observe their own cheek cells, onion cells, and pond water microorganisms. By the end of the lab, students should be able to classify the types of cells within domains and kingdoms.

Lesson Relevance to Performance Task and Students:

Microscopy is critical to numerous areas of scientific research. For example, I use microscopy to identify bacterial structures regularly. Cell microscopy will give the students a better idea of why certain organisms are classified under certain domains and kingdoms.

Anticipatory Set/Capture Interest:
The PowerPoint presentation (Cells.pptx) will be given to peak students' interest in cells and classification.

Guided Practice:
Students will learn how to make and stain wet mount slides of cheek cells, onions, and pond water. They will also learn to better focus on microscopic items.

Independent Practice:
Students must work through the Cell microscopy worksheet (Cell lab.docx).

Remediation and/or Enrichment:
Remediation: Follow IEP.
Enrichment: Have other prepared slides for examination.

Check(s) for Understanding:
Magnification drawings and the answers to the worksheet questions.
Questions:

1. Of what kingdom are the onion cells?
2. What data was used to make the conclusion of which kingdom the onion cell belonged?
3. What strategy would you recommend when trying to view pond water microorganisms?

Closure:
Go over the worksheet questions.

Possible Alternate Subject Integrations:
Talking about the cellular components

Teacher Notes:
Iodine can be used to stain clear onion and cheek cells. Pond algae and microinsects do not need to be stained.